

Remarks

This Amendment is responsive to the Office Action of **May 16, 2005**. Reexamination and reconsideration of **claims 1-28** is respectfully requested.

Summary of The Office Action

Claims 8, 14, and 20 were allowed in a previous office action.

Claims 1-7, 9-13, 15-19, 21-35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Saul (EP 1080898 A2) in view of Shiraishi et al. (US 6186611) and Rezanka (US 5751302).

Informalities in the Claims

Claims 9, 14, and 28 have been amended to correct a misspelled word “are”. Applicants do not believe that the scope of the claims have been changed since the amendments relate to making cosmetic changes. No new matter has been added.

The Present Claims Patentably Distinguish Over the References of Record

Independent Claim 1

Claim 1 is directed a fluid ejection device and has been amended to clarify that each zone has a plurality of firing resistors and corresponding nozzles. No new matter has been added by way of this amendment.

Claim 1 was rejected under 35 U.S.C. §103(a) as being unpatentable over Saul (EP 1080898 A2) in view of Shiraishi et al. (US 6186611) and Rezanka (US 5751302). In particular, the Office Action states that Saul does not disclose the addressable select logic of claim 1 and attempts to cure this shortcoming by modifying Saul with Shiraishi.

Applicant, however, submits that Shiraishi does not teach or suggest addressable select logic and the control of firing resistors as claimed since claim 1 recites that each zone has a plurality of firing resistors and corresponding nozzles. A plurality of firing resistors can be controlled by the same fire pulse. It is clear from Figure 1 of Shiraishi, it does not disclose zones having a plurality of firing resistors and nozzles. Rather, each nozzle and firing element in print head 1 is separately controlled by its own dedicated enable signal ENB and one of the driver circuits 6-9. Thus, if Shiraishi is interpreted to have zones, each zone has only one individually controlled firing element. The Examiner has confirmed this in the Office Action on page 3, second paragraph, where it states “FIG. 1: a corresponding zone has one firing element...”

Therefore, Shiraishi fails to cure the shortcomings of Saul, and claim 1 is not taught or suggested by the combined references. Rezanka does not help in this regard. Thus, claim 1 patentably distinguishes over the references, individually or in combination, and is in condition for allowance. Accordingly, dependent **claims 2-7** also patentably distinguish over the references and are in condition for allowance.

Independent Claim 9

Claim 9 has been amended to clarify that each zone has a plurality of firing resistors and corresponding nozzles. No new matter has been added by means of this amendment. **Claim 9** was rejected under 35 U.S.C. § 103(a) as being unpatentable over Saul (EP 1080898 A2) in view of Shiraishi et al. (US 6186611) and Rezanka (US 5751302). As previously explained, Shiraishi discloses single firing elements that are separately controlled.

Shiraishi thus fails to disclose any zones having a plurality of firing resistors and corresponding nozzles and that selected firing resistors in the same zone are coupled to a same fire pulse as recited in claim 9. As such, combining Shiraishi with Saul still fails to cure the shortcomings of Saul. Rezanka does not help in this regard. Accordingly, the 103 rejection is not supported and should be removed.

Since claim 9 recites features not disclosed by the references, claim 9 patentably distinguishes over the references. Accordingly, dependent **claims 10-13** also patentably distinguish over the references and are in condition for allowance.

Independent Claim 15

Claim 15 has been amended to clarify that each zone has a plurality of firing resistors and corresponding nozzles. No new matter has been added by means of this amendment. **Claim 15** was rejected under 35 U.S.C. § 103(a) as being unpatentable over Saul in view of Shiraishi et al. and Rezanka.

As previously explained, Shiraishi discloses single firing elements that are separately controlled. Therefore, combining Saul with Shiraishi still fails to teach or suggest the claimed elements of coupling and controlling as recited in claim 15. Since claim 15 recites features not disclosed or suggested by the references, claim 15 patentably distinguishes over the references. Accordingly, dependent **claims 16-19** also patentably distinguish over the references and are in condition for allowance.

Independent Claim 21

Claim 21 has been amended to clarify that each zone has a plurality of firing resistors and corresponding nozzles. No new matter has been added by means of this amendment. **Claim 21** was rejected under 35 U.S.C. § 103(a) as being unpatentable over Saul in view of Shiraishi et al. and Rezanka.

As previously explained, Shiraishi fails to disclose any zones having a plurality of firing resistors and corresponding nozzles and that selected firing resistors in the same zone are coupled to a same fire pulse. Therefore, combining Saul with Shiraishi still fails to teach or suggest the claimed configuration of firing resistors and logic as recited in claim 21. Rezanka also fails to cure this shortcoming. Since claim 21 recites features not disclosed or suggested by

the references, claim 21 patentably distinguishes over the references. Accordingly, dependent **claims 22-23** also patentably distinguish over the references and are in condition for allowance.

Independent Claim 24

Claim 24 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Saul in view of Shiraishi et al. and Rezanka.

Claim 24 recites at least a first zone of the plurality of zones has a plurality of resistors and corresponding nozzles and controlling, with the same fire pulse, an initiation and a duration in which selected firing resistors in the first zone are coupled to an internal substantially constant voltage to thereby control fluid ejection from the nozzles in the same zone corresponding to the selected firing resistors.

As previously explained, Shiraishi fails to disclose any zones having a plurality of firing resistors and corresponding nozzles and does not control the firing resistors with the same fire pulse. Therefore, combining Saul with Shiraishi still fails to teach or suggest the claimed elements of coupling and controlling as recited in claim 24. Rezanka also fails to cure this shortcoming. Since claim 24 recites features not disclosed or suggested by the references, claim 24 patentably distinguishes over the references. Accordingly, dependent **claim 25** also patentably distinguishes over the references and is in condition for allowance.

Independent Claim 26

Claim 26 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Saul in view of Shiraishi et al. and Rezanka. Claim 26 recites a plurality of zones, wherein each zone comprises a plurality of nozzles and corresponding firing resistors and at least one multiplexer responsive to a select address to couple a first fire pulse to a first plurality of firing resistors in a first zone...

As previously explained, Shiraishi discloses single firing elements that are separately controlled. Thus, Shiraishi fails to teach or suggest the configuration of zones, multiplexer and first fire pulse as recited in claim 26. Therefore, combining Saul with Shiraishi still fails to teach or suggest the claimed elements as recited in claim 26 and the 103 rejection should be withdrawn. Rezanka also fails to cure this shortcoming.

Since claim 26 recites features not taught or suggested by the references, alone or in combination, claim 26 patentably distinguishes over the references. Accordingly, dependent **claims 27-28** also patentably distinguish over the references and are in condition for allowance.

Independent Claim 29

Claims 29-35 have been cancelled without prejudice as such claims were determined to be duplicative of already existing claims.

No Motivation or Suggestion to Combine Saul in view of Shiraishi et al. and Rezanka

Applicant respectfully submits there is no motivation or suggestion to combine Saul, Shiraishi, and Rezanka. An obviousness rejection under 103(a) requires that the subject matter of the claim taken as a whole be obvious over the prior art. This, therefore, requires motivation or suggestion to combine all references used in an obviousness rejection. In other words, there must be motivation or suggestion to combine a reference with each other reference. If, however, there is no motivation or suggestion to combine two of the references used in the rejection, a combination of three references is improper as in the present rejection.

Applicant respectfully submits that it would not be obvious to combine or modify Shiraishi with Rezanka because they function using different principles of operation. Therefore, there is no motivation or suggestion for one of ordinary skill to combine the references, and the 103 rejection should be withdrawn. Applicant realizes the rejection attempts to modify Saul with Rezanka using its power supply but the resultant combination includes all three references.

In particular, Shiraishi operates based on a modulating voltage, whereas Rezanka is configured to operate based on a constant voltage. Thus, one of ordinary skill in the art would not have the motivation to combine these references. Shiraishi states in column 6, lines 26-29, "The modulation voltage VM may take a sawtooth waveform, a sinusoidal waveform, or a staircase waveform so long as the modulation voltage VM has a periodicity." A constant voltage, therefore, cannot be used with Shiraishi. On the other hand, Rezanka discusses, in column 6, lines 32-41, that it uses a constant optimum burn voltage with adjustable length firing pulses instead of adjusting the power level. A modulating voltage, therefore, cannot be used with Rezanka.

Accordingly, one skilled in the art would not combine Shiraishi with Rezanka, as there is no suggestion or motivation to combine the two references. Such a combination would destroy the intended purpose of Shiraishi and Rezanka. Therefore, one of skill in the art would not look to both Shiraishi and Rezanka for the same suggested technology and would not use them both to modify Saul. Thus, the three way combination of the present rejection is improper under section 103 and the rejection should be withdrawn.


Applicant also repeats the arguments presented in previous responses, which are incorporated by reference.

Conclusion

For the reasons set forth above, **claims 1-28** patentably and unobviously distinguish over the references of record and are now in condition for allowance. An early allowance of all claims is earnestly solicited.

Respectfully submitted,

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